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An operational definition of the standard for learner achievement at Level 2, with respect to the skills of reading and writing, was proposed for Spanish as one aspect of a research project. The method described, serving as the basis for articulation of level achievement, deals with general procedures, proposed operational definition of reading and writing for Level 2, analysis of the data collected, description of the experimental groups, grammatical structures, and materials and procedures in the experiment. The objectives of the collaborated project are examined as well as the conclusions and implications of this particular phase of the research. Statistical tables are included. For companion documents see ED 021 514 and FL 001 181. (RL)

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James R. Shawl

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1. Introduction

1.1 Problem. In most foreign-language programs in America today, there is a lack of coordination of the steps toward achieving a working knowledge of the language. One cause is that no common concept of what constitutes a level of achievement is generally held among teachers. There is a need to agree on fundamental objectives to be attained in each foreign-language course. If the study of foreign languages is to be made more efficient, successive levels of student achievement must be defined as part of a long-range effort to improve the articulation of these levels in a program of language acquisition.

1.2 Background. Investigation directly related to this problem is being carried on by the Indiana Language Program (ILP), which has been in progress nearly six years. Conferences on articulation were held in 1964-65 to study coordination between college and high school levels. A report of an out-of-state evaluation committee indicated that more outside help is needed to cope with this extensive problem since the present research and development budget of the ILP is not adequate to establish a complete and definitive statement.

A project similar to the ILP is now under way in the state of Washington. The following excerpt is taken from the proposal of the Board of Regents of the University of Washington to the Ford Foundation concerning a program to strengthen foreign-language teaching in the state of Washington.

> The present proposal is derived from discussions arising in problems of placement which have resulted in part from the introduction of audio-lingual teaching... But beneath the problem of diversity in instruction lies a lack of agreement about what students at different stages of development should be accomplished in. The importance of these questions for the teaching and administration of foreign-language study was confirmed in a meeting with the statewide Advisory Committee to the Supervisor of Foreign-Language Instruction in the State Department of Public Instruction. This committee of 15 members... set the problem of the articulation within the school districts,

between school districts, and between schools and the colleges, as the primary problem to be solved - a pre-condition for long-range improvement of foreign-language teaching in the state.

Finally, many state education departments and local school districts have devised their own curriculum guides which attempt to define levels of achievement, and give direction to the foreign-language sequence which they individually have developed. But the definition of the proficiency to be attained at each level falls short of an operational definition such as is needed as a basis for measuring whether, or to what degree, the proficiency is present.

The tenor of the above references, taken collectively, indicates the need to devise a formal and functional definition of levels. Close coordination of language instruction at the national, state, and local levels requires an operational definition of levels in the form of a description of proficiency at successive stages of development.

1.3 Educational Objectives. Two general educational objectives underlie the investigation in this study. They are (1) an ideal methodological approach to language instruction, and (2) an understanding of the most enlightened conception of a given language's structure that has yet been attained. The latter objective, a primary concern of this study, has been carried out by collecting language data, and describing them in terms of certain linguistic principles.[1] The language data were collected from current pedagogical materials, and analyzed in terms of a transformational generative grammar of Spanish. The analysis resulted in a detailed description of syntactic structure for the data collected, and provided a basis for grouping them into related sets.

This enlightened conception of a given language's structure should be helpful in allowing teachers to come to a common understanding of which grammatical structures are fundamental and necessary for the beginning learner, and how the teacher may present them more effectively. It is especially intended to help teachers conceive with more precision the syntactic composition and interrelatedness of the language structures they use.

We have limited the linguistic scope of this study to a specification of syntactic composition for the data collected. On the basis of this linguistic description, we also proposed a definition of terminal behavior for each of the sets of structures described by the transformational generative grammar. This proposed terminal behavior consists of operational statements which indicate what it is the learner does to demonstrate his ability to use the structures correctly. The terminal behavior included in this study is intended for the skills of reading and writing. There is, however, another study which includes terminal behavior for the skills of auditory comprehension and speaking.[2]

1.4 Objective of this Dissertation.[3] The main objective of this dissertation was to define certain essential aspects of a level of achievement for second-language learning by (1) specifying the syntax data to be included in the definition (2) analyzing these data in terms of a transformational generative grammar, and (3) proposing terminal behavior, in operational terms, with respect to the data collected.

1.5 Hypotheses and Design. Since language learning involves becoming native-like in the ability to manipulate language structures, and transformational generative grammar has the capacity to account for what it is a language learner must control if he is to approximate the competence of a native speaker, this study used a transformational analysis to describe the data collected.

Transformational generative grammar has not yet been shown to be a learning model. Its function is to provide an explicit and enlightening concept of a given language's structure. It would seem to follow, however, that second-language learners receiving grammatical structures in terms of the explicit statements of syntactic composition and interrelationships provided by the grammar should benefit considerably. An experiment was designed to test this statement.

The chief purpose of this experiment was to compare, in respect to the skills of reading and writing, learners who had learned a specified number of grammatical structures as they were presented in an already existing textbook, with those who had learned the same grammatical structures as organized and described in this study. We hypothesized, therefore, that

learners who learn a second language by being exposed to materials in which the language data have been organized into sets of related structures, and where explicit statements of syntactic composition and interrelationships have been stated, demonstrate a higher degree of learning achievement in the recognition and production of the grammatical structures than do learners who learn a second language by being exposed to materials in which the language data are not organized into sets of related structures, and explicit statements of syntactic composition and interrelationships are not included.

From this research hypothesis two null hypotheses were drawn: (1) learners do not demonstrate a higher degree of learning achievement in the recognition and production of grammatical structures by being exposed to materials in which the language data have been organized into sets of related structures, as those who have not been exposed to this organization, and (2) learners do not demonstrate a higher degree of learning achievement in the recognition and production of grammatical structures by being exposed to materials in which explicit statements of syntactic composition and interrelationships have been stated, as those who have not been exposed to these explicit statements.

It was clear that each of these variables (i.e., organization of structures and explicit statements of structure) could be reduced to a binary contrast: the variable concerning the organization of structures to (1) experimental order, that is, the organization of grammatical structures as described in this study vs. (2) the order in the textbook selected[4]; and the variable concerning the explicit statements of structure to (1) the presence of such statements vs. (2) the absence of such statements.

The experimental design best suited to deal with two or more variables simultaneously (rather than in separate experiments) is a factorial design. A 2 by 2 (2 x 2) factorial design was adopted for this experiment. With this design, the effects of two independent variables can be studied separately or in relation to each other. That is, we are able to determine whether the joint effect of the variables on learning achievement is greater or less than can be attributed to either variable acting alone. The following diagram represents the factorial design used in this experiment:

(X_1) Organization of Grammatical Structures

(X_2) Explicit Statements of Syntactic Comp. and Interrls.

	experimental order	textbook order
yes		
no		

Mean:

Difference:

Mean:

Difference:

2. Method

2.1 General Procedures. The procedure used in this study entailed three steps. First, we delimited a corpus of grammatical structures by examining three audio-lingual textbooks, and by extracting language date from them. Second, we analyzed the language data collected in terms of a transformational generative grammar of Spanish. This analysis resulted in a detailed description of syntactic structure for the data collected, and provided a basis for grouping them into related sets. Third, we formulated operational statements of desired terminal behavior to be acquired by the learner. These statements were based on the linguistic content specified in the first and second steps. That is, for each set of structures there is a set of operational statements about what the learner is expected to do with the structures in order to demonstrate his "mastery" of them, in respect to the skills of reading and writing.

2.2 Proposed Operational Definition of Reading and Writing for Level II. Reading directly in Spanish is defined for Level II as the ability to correlate a graphic configuration of the

writing system with its corresponding acoustic configuration of the phonological system, and to assign an appropriate semantic interpretation for sentences representing those grammatical structures included in this study.

In the process of reading, the learner reacts to recurrent and contrastive graphic configurations, which consist of the letter patterns and their spatial arrangement on paper set forth according to the conventions of the writing system. These visual symbols serve to signal the grammatical structure and semantic interpretations to be assigned to messages.

A learner "reads," therefore, insofar as he responds correctly to the language elements represented by the graphic configurations. His response must be both instantaneous and automatic if he is to read directly in Spanish with appropriate speed and comprehension. The ultimate success in developing the learner's ability to read directly in Spanish with appropriate speed and comprehension depends very much on his control of the phonological system, as well as on his knowledge of the grammatical structures of the language.

Writing is defined for Level II as the ability to correlate an acoustic configuration of the phonological system with its appropriate graphic configuration of the writing system for sentences representing those grammatical structures included in this study. The learner "writes," therefore, insofar as he converts a phonetic pattern into a graphemic one. This he does by means of letters, numerals, punctuation marks, spaces, and spelling rules. This study assumes mastery of these elements, and concentrates on grammatical structures.

In this study, no distinction is made between the repertory of spoken patterns and that of written patterns. That is, writing, as conceived here, will not include additional or different grammatical structures from those included in speaking.

2.3 Analysis of the Data Collected. A transformational generative grammar of Spanish was used to analyze the data collected. The grammar was constructed according to the theory proposed by Noam Chomsky in Aspects of the Theory of Syntax (1965). With this grammar, we were able to describe the data collected in terms of a limited number of "basic" sentences, and a specified number of explicitly defined processes, which

when applied, were capable of changing certain "basic" sentences by adding, subtracting, or rearranging sentence elements. As a result of this analysis, the language data collected were organized into sets of related structures based on syntactic content and behavior. These sets were formed into sections. Each section consists of an introductory explanation of the linguistic description given for those grammatical structures included in the section. The introductory explanations are intended to serve as an orientation for the following linguistic description, as well as, in some instances, a justification for the linguistic description given. A recommendation as to the terminal behavior that should be expected of the learner is included for each section.

It must be made clear that the language data described in this study were not established on any linguistic or psycholinguistic theory, but were based on current audio-lingual teaching materials. Linguistic theory and principles were used not to establish scientifically what language data were to be included in this study, but rather, to organize the data collected in the most enlightening way the authors could devise.

The recommended terminal behavior which concludes each section is organized and presented in relation to the four language skills: auditory comprehension, speaking, reading, and writing.[2] Our description of terminal behavior consists of a number of operational statements about the recognition and production of the linguistically described structures.

2.4 Description of the Experimental Groups. Within the realistic setting of an ongoing educational program at Northern Illinois University (DeKalb, Illinois), four groups of Ss (subjects) were formed for this experiment. The 73 Ss were all taken from the beginning course (FL-162) in Spanish, the second semester of the first year, during which time the Ss received the grammatical structures selected for the test for the first time. None of the Ss had been exposed to these structures until they were presented by the Es and the Instructors. The Ss were neither aware of the experiment itself nor of the fact that they were part of any special group until they were tested. For the experiment, each group consisted of a class of learners presently studying FL-162, and were designated as belonging to one of the four groups described below:

$Group_1$ (16 Ss): were taught the experimentally-organized grammatical structures, and explicit statements of syntactic composition and interrelationships as presented and described in this study.

$Group_2$ (22 Ss): were taught the experimentally-organized structures, but no explicit statements of syntactic composition and interrelationships were given.

$Group_3$ (16 Ss): were taught the textbook-organized grammatical structures, and explicit statements of syntactic composition and interrelationships as presented and described in this study.

$Group_4$ (19 Ss): were taught the textbook-organized grammatical structures, and no explicit statements of syntactic composition and interrelationships were given.

It must be noted, however, that although the Ss in Groups two and four were not exposed to the explicit statements of syntactic composition as presented and described in this study, they were not prevented from seeing other traditional statements of grammatical description for the experimental structures.

2.5 The Grammatical Structures. The grammatical structures used in this experiment include sentences in which a nominalized sentence occurs in subject position, object-of-verb position, and object-of-preposition position. Traditionally, these structures are presented in separate sections of a teaching text, or as in the case of audio-lingual materials throughout the lessons, with no attempt to show the structural similarity that exists among them. For example, sentences like "Es preciso que Juan venga" are included in a section devoted to Impersonal Expressions; sentences like "Lo haré para que Juan venga" are included in a section of Adverbial Clauses (usually treating para que as a conjunction); and sentences like "Quiero que Juan venga" are treated in a section devoted to Noun Clauses. In presenting these structures, most textbooks concentrate on the choice that must be made between the indicative/subjunctive for the underlined structures.

In this study, however, these grammatical structures are presented and described in the same section - "Nominalization of a Constituent Sentence with que" - bringing into focus their structural similarities.

In presenting the experimental structures to the Ss, an equal number of class periods was used, although the Groups taught the structures according to the textbook organization, received other nonrelated grammatical material along with the experimental structures.

2.6 Materials and Procedures. Quantitative post-tests for the skills of reading and writing were needed to measure any differences in learning achievement produced by the independent variables. Commercial tests in Spanish were not available which would measure learner achievement in terms of the descriptions of terminal behavior in this study. Consequently, the tests used in this experiment to measure learner achievement for the skills of reading and writing were constructed by the investigator.

For the reading test, each S had the entire test before him in printed form. The test consisted of 20 completion items for which the S read an incomplete Spanish fragment followed by four suggested choices, only one of which, when joined with the stimulus fragment, formed a grammatically correct sentence. He was to select this one and mark it on his answer sheet. The following is an example:

Yo saldré para _____.

a. que José puede comer
b. a leer el periódico
c. que Juan venga temprano
d. María irá al cine

The writing test consisted of 12 completion items. Each item presented the S with a Spanish sentence fragment followed by a blank space in which he was instructed to complete the fragment by writing an appropriate grammatical structure. The following is an example:

Me quedaré en casa para que _____.

3. Results

The achievement tests in the skills of reading and writing were administered to all Ss. The relevant statistical results for these tests are reported in Tables 1 - 6.

A comparison of the mean scores of the two groups exposed to explicit statements of syntactic composition and interrelationships, as presented and described in this study, with those of the two groups not exposed to these explicit statements (Reading: 14.00 vs. 9.32) (Writing: 9.30 vs. 7.44), reveals that the Ss who were taught explicit statements of syntactic composition and interrelationships performed noticeably better than Ss who did not receive these statements; hence the null hypothesis of no difference in achievement between Ss receiving explicit statements and those not receiving explicit statements is rejected. That is, on the basis of the data, we can state that the presence vs. the absence of explicit statements of syntactic composition and interrelationships is significantly associated with learner achievement for the skills of reading and writing.

A comparison of the mean scores of the two groups exposed to the grammatical structures arranged and presented according to the experimental order with those of the two groups exposed to the grammatical structures presented according to the textbook order (Reading: 11.89 vs. 11.42) (Writing: 8.10 vs. 8.64), reveals that the order of presentation of the grammatical structures had little effect on achievement scores for the skills of reading and writing; hence the null hypothesis of no difference in achievement between Ss receiving the grammatical structures according to the experimental order and the textbook order is accepted.

For reading, since the difference between the mean scores within the experimental order is practically the same as the difference between the mean scores within the textbook order (4.71 vs. 4.65), no interaction between the independent variables was observed (See Table 1).

For writing, however, the difference between the mean scores within the experimental order was observed not to be equal to the difference between the mean scores for the textbook order (2.02 vs. 1.71). This would suggest that the explicit statements of syntactic composition and interrelationships had a slightly greater advantage over no statements in the experimental order than in the textbook order (See Table 2).

4. Discussion

While the performance scores of subjects who were taught the grammatical structures used in this experiment along with explicit statements of syntactic composition and interrelationships were substantially higher, for both the skills of reading and writing, than the performance scores for those who received these structures without the explicit statements, there seemed to be no significant difference in performance scores due to the specific organization of the grammatical structures used in this experiment. That is, no significant advantage of presenting these structures according to the organization used in this study (experimental order) over the organization used in the textbook (textbook order), or vice versa, was observed. As a result, the null hypothesis that learners do not demonstrate a higher degree of learning achievement in the recognition and production of grammatical structures by being exposed to materials in which the language data have been organized into sets of related structures was accepted.

Though it was accepted, it must be pointed out, however, that both the experimental order and the textbook order used in this experiment were quite similar. In the experimental order, the structures used in this experiment were presented in sequence without any unrelated material coming between them. In the textbook order, even though unrelated material interrupted the sequential presentation, the structures used in this experiment were all contained in three, almost contiguous chapters (42, 44, 46). It might be the case, therefore, that for this experiment, not enough difference between the experimental order and the textbook order was present to influence learner achievement one way or the other. Further testing will have to be carried out in this area before more reliable results can be obtained.

5. Conclusions and Implications

Achievement scores suggest tha[illegible]uage learners who are exposed to language data a[illegible]plicit statements of syntactic composition and inter[illegible]ships (as presented and described in this study) demonstr[illegible]igher degree of learning achievement in the recognition a[illegible]uction of these data, for the skills of reading and writing, than do learners who are exposed to the same language data, but do not receive the explicit statements of syntactic composition and interrelationships.

Although the test results did not indicate any significant difference in learner achievement due to the specific organization (textbook vs. experimental) for the structures used in this experiment, certain reservations were made on account of the similarity in the two presentations (See Discussion).

It would seem that the differences in learner achievement could be explained by assuming that learners do "learn" a foreign language as a result of exposure to language data which have been organized and presented in more than one way, but that learning is more or less complete to the extent that the learner "understands" the grammatical structure of what it is he is learning.

The implications of these findings seem to be of considerable interest for persons concerned with second-language teaching, since they demonstrate that learners exposed to language date for which explicit statements of syntactic composition and interrelationships are given (according to the analysis afforded by this study), demonstrate a higher degree of learning achievement than those not exposed to these statements.

A definition of the standard for learner achievement at Level II, then, in which these explicit statements of syntactic composition are included, and language data are organized so that the interrelationships existing among structures are revealed seems to be pedagogically desirable.

6. Summary

In most foreign-language programs in America today, there is a lack of coordination of the steps toward achieving a working knowledge of the language. The fact that no common concept of what constitutes a level of achievement is considered to be a major cause, since without clear and fully defined levels of learner achievement any effort toward meaningful articulation becomes difficult.

Two main objectives were set for this study: (1) the establishment and linguistic description of language data to be agreed upon for Level II, and (2) the development of operational statements of expected terminal behavior for the language data, based on the linguistic analysis used in this study.

Since language learning involves becoming native-like in the ability to manipulate language structures, and transformational generative grammar has the capacity to account for what it is the language learner must control if he is to approximate the competence of the native speaker, the grammatical model used to organize and describe the language data collected for this study was a transformational generative grammar of Spanish. It was based on the theory proposed by Noam Chomsky in Aspects of the Theory of Syntax (1965). With this grammar, the data collected were described in terms of a limited number of "basic" sentences, and a specified number of explicitly defined processes, which when applied, were capable of changing certain "basic" sentences by adding, subtracting, or rearranging sentence elements. As a result of this analysis, the language data collected were organized into sets of related structures based on syntactic content and behavior. These sets were formed into sections. Each section consists of an introductory explanation for the following linguistic description of those related structures included in the section. The linguistic description is then followed by a recommendation as to the terminal behavior that should be expected of the learner. This terminal behavior is in terms of operational statements about the recognition and production of the linguistically described data.

Transformational generative grammar has not yet been shown to be a language-learning model. Its function is to provide an explicit and enlightening concept of a given language's structure. It would seem to follow, however, that second-language learners receiving language data in terms of explicit statements of syntactic composition and interrelationships provided by the transformational grammar should benefit considerably.

We hypothesized, therefore, that learners who learn a second language by being exposed to materials in which the language data have been organized into sets of related structures and where explicit statements of syntactic composition and interrelationships have been stated, demonstrate a higher degree of learning achievement in the recognition and production of grammatical structures than do learners who learn a second language by being exposed to materials in which the language data are not organized into related sets of grammatical structures, and explicit statements of syntactic composition and interrelationships are not included.

A set of grammatical structures was selected for testing. Four groups of college learners were taught controlled variations of the grammatical structures, and all learners were tested with respect to the skills of reading and writing.

A comparison of the mean scores of the learners tested (See Tables 1 and 2) suggests that those receiving the grammatical structures in terms of the explicit statements of syntactic composition and interrelationships used in this study performed noticeably better than those who had received these structures without the explicit statements. The results of this experiment, although modest, are indeed encouraging.

A definition of the standard for learner achievement at Level II, then, in which these explicit statements of syntactic composition are included, and language data are organized so that the interrelationships existing among structures are revealed, seems to be pedagogically desirable.

Appendix 1. Statistical Tables

Mean Reading Scores

Table 1

(X_1) Organization of Grammatical Structures

(X_2) Explicit Statements of Syntactic Comp. and Interrls.		experimental order	textbook order	Mean:	Difference:
	yes	14.25	13.75	14.00	.50
	no	9.54	9.10	9.32	.44
Mean:		11.89	11.42		
Difference:		4.71	4.65		

Mean Writing Scores

Table 2

(X_1) Organization of Grammatical Structures

(X_2) Explicit Statements of Syntactic Comp and Interrls.		experimental order	textbook order	Mean:	Difference:
	yes	9.11	9.50	9.30	.39
	no	7.09	7.79	7.44	.70
Mean:		8.10	8.64		
Difference:		2.02	1.71		

Summary of Raw Data for Reading:

Table 3

		experimental order	textbook order	Total:
yes	ΣX	228	220	448
	ΣX^2	3378	3166	6544
	n	16	16	32
no	ΣX	210	173	383
	ΣX^2	2168	1715	3883
	n	22	19	41
Total:		438	393	831
		5546	4881	10427
		38	35	73

Summary of Analysis of Variance for Reading Scores:

Table 4

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.
Between	394	3			
r	390	1	390	47	($p < .01$)
c	1	1	1	< 1	(n.s.)
r+c	3	1	3	< 1	(n.s.)
Within	574	69	8.3		
Total:	968	72			

Summary of Raw Data for Writing:

Table 5

		experimental order	textbook order	Total:
yes		ΣX 164	ΣX 152	316
		ΣX^2 1570	ΣX^2 1496	3066
		n 16	n 16	32
no		ΣX 156	ΣX 141	297
		ΣX^2 1186	ΣX^2 1109	2295
		n 22	n 19	41
Total:		320	293	613
		2756	2605	5361
		38	35	73

Summary of Analysis of Variance for Writing Scores:

Table 6

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.
Between	130.03	3			
r	124.42	1	124.42	102.83	($p < .01$)
c	.05	1	.05	< 1	(n.s.)
r+c	5.56	1	5.56	4.595	($p < .05$)
Within	83.45	69	1.21		
Total:	213.48	72			

Footnotes

[1]The language data used in this study were collected from the following three audio-lingual teaching textbooks:

(1) LaGrone, Gregory G., Andrea Sendon McHenry, and Patricia O'Connor. Entender y Hablar. New York: Holt, Rinehart and Winston, 1961.

(2) Mueller, Klaus A., Luis Vargas, Roberto Franco, and Davis Woodword. Spanish for Secondary Schools. Boston: D. C. Heath and Company, 1962.

(3) Wolfe, David L., Roger L. Hadlich, and John G. Inman. A Structural Course in Spanish. New York: The Macmillan Company, 1963.

[2]Another investigator, Mr. Clay Ben Christensen, has carried out a similar study (OEC-4-7-068822-1638) for the skills of auditory comprehension and speaking. Both this study and his are to be combined into a joint dissertation.[3]

[3]This report is a summary of a dissertational study entitled A Definition of Achievement Level II in the Control of Spanish Syntax carried out at the University of Washington, Seattle. The full definition, in terms of grammatical structures and operational statements of terminal behavior, is to be found in the dissertatinn.

[4]Armitage, Richard, and Walter Meiden. Beginning Spanish. Boston: Houghton Mifflin Company, 1963.

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800 ABSTRACT

801 An operational definition of the standard for learner achievement
802 at Level II, with respect to the skills of reading and writing, was
803 proposed for Spanish. Language data collected from three audio-
804 lingual teaching texts were analyzed in terms of a transformational
805 generative grammar of Spanish. The analysis provided a detailed
806 description of syntactic composition and interrelationships for the
807 data collected, and a means of grouping them into related sets.
808 Operational statements of expected terminal behavior about the
809 recognition and production of the linguistically analyzed data were
810 developed. An experimental demonstration in terms of learner
811 achievement for this newly-organized data was sought. Four
812 groups of college learners were formed. Two groups learned a
813 portion of the data as presented in this study; two groups learned
814 the same data as presented in an existing textbook. All groups
815 were tested. A comparison of the mean scores indicates that
816 the groups learning the data as it is presented in this study
817 demonstrated a higher degree of learning achievement, with
818 respect to the skills of reading and writing, than did the two
819 groups learning the same data from the textbook. It was con-
820 cluded that a definition of the standard for learner achievement
821 at Level II, in which these explicit statements of syntactic
822 composition and interrelationships are included seems to be
pedagogically desirable.